

1. (Currently Amended) An automated apparatus for performing reaction kinetics studies, the apparatus comprising:

a robotic device ~~for transferring~~ that transfers one reaction vessel from one hot reaction block to one cold reaction block; and

block to one cold reaction block at a predefined transfer time within the predetermined sampling interval, the predetermined temperature profile representing the temperature of at least one of the hot reaction blocks over a time period of the study;

2. (Original) The apparatus of claim 1, wherein each of the hot and cold reaction blocks has a plurality of openings formed therein, one opening receiving one reaction vessel.

3. (Currently Amended) The apparatus of claim 1, further including:

a heating device associated with each of the hot reaction blocks ~~for controlled~~ that controls heating thereof; and

a cooling device associated with each of the cold reaction blocks ~~for controlled~~ that controls cooling thereof, wherein each of the heating and cooling devices is in communication with the controller.
4. (Original) The apparatus of claim 3, wherein the heating device heats the hot reaction blocks according to the predetermined temperature profile.
5. (Original) The apparatus of claim 1, wherein the predetermined temperature profile includes an initial temperature and a final temperature, the predetermined temperature profile being defined by the initial temperature and the final temperature.
6. (Original) The apparatus of claim 1, wherein the predetermined sampling interval includes a study start time and a study stop time with the sampling interval being the time period beginning with the start time and ending with the stop time of the study.
7. (Original) The apparatus of claim 1, wherein the robotic device moves in three dimensions relative to the plurality of reaction blocks so as to permit the robotic device to grasp and transfer the plurality of reaction vessels.
8. (Currently Amended) The apparatus of claim 1, wherein the robotic device has a gripping mechanism ~~for gripping and transferring~~ that grips and transfers one reaction vessel from the

hot reaction block to the cold reaction block at the predefined transfer time.

9. (Original) The apparatus of claim 8, wherein the gripping mechanism is operated by toggling a predetermined pressure between first and second lines such that the gripping mechanism closes to securely engage one reaction vessel for transfer from the hot reaction block to the cold reaction block when a pressure is applied to the first line with the second line being vented, the gripping mechanism opening to release the one reaction vessel when the pressure is applied to the second line with the first line being vented.
10. (Original) The apparatus of claim 8, wherein the gripping mechanism includes a first finger and a second opposing finger with a space therebetween, one reaction vessel being disposed within the space and held between the first and second fingers during the transfer of the one reaction vessel from the hot reaction block to the cold reaction block.
11. (Original) The apparatus of claim 1, wherein the controller includes a master clock and a count-down clock, the master clock displaying the sampling interval for the study and the count-down clock counting down the time before the next transfer of one of the reaction vessels.
12. (Currently Amended) The apparatus of claim 1, wherein the master controller includes a user interface ~~for~~ configured to inputting input the predetermined temperature profile and the predetermined sampling interval.

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block; and

a controller having a user interface ~~for inputting~~
configured to input a predetermined temperature profile and a
predetermined sampling interval, the controller being in
communication with the plurality of reaction blocks and the
robotic device so as to instruct the robotic device to transfer one
reaction vessel from one hot reaction block to one cold reaction
block at a predefined transfer time within the predetermined
sampling interval, the predetermined temperature profile
representing the temperature of at least one of the hot reaction
blocks over a time period of the study;

wherein the predetermined temperature profile is an
isothermal temperature profile.

17. (Cancelled)

18. (Currently Amended) An automated apparatus for performing
reaction kinetics studies, the apparatus comprising:

a plurality of reaction blocks including at least one hot
reaction block ~~for heating~~ that heats one or more reaction vessels
and at least one cold reaction block ~~for cooling~~ that cools the one
or more reaction vessels after heating thereof;

a robotic device ~~for transferring~~ that transfers one
reaction vessel from one hot reaction block to one cold reaction
block;

a controller having a user interface ~~for inputting~~
configured to input at least (1) a number of reaction vessels for
the study, (2) a first predetermined temperature profile and a
second predetermined temperature profile, (3) a predetermined
study time period beginning with a start time and ending with a

stop time, and (4) a selected kinetics model, wherein the controller is in communication with the hot and cold reaction blocks and the robotic device, the controller including an operating system which instructs the robotic device to transfer the plurality of reaction vessels from one hot reaction block to one cold reaction block at predefined transfer times and wherein at least one of the hot reaction blocks is heated according to the first predetermined temperature profile over the study time period, the controller collecting and storing kinetics data for each reaction vessel transfer, the kinetics data at least including a temperature of the hot reaction block at each transfer time and a sampling time when each reaction vessel transfer from the hot reaction block to the cold reaction block occurred; and

wherein the kinetics data is fitted to the selected kinetics model inputted by the user to generate a representative temperature vs. time graph, wherein the first predetermined temperature profile is a nonisothermal temperature profile and the second predetermined temperature profile comprises an isothermal temperature profile.

19. (Currently Amended) The apparatus of claim 20, wherein the hot reaction block has a number of openings formed therein for ~~receiving~~ that receives a number of reaction vessels, the hot reaction blocks being connected to one or more heating devices with one or more temperature control devices being associated with the one or more heating devices ~~for setting~~ that sets the temperature of one or more hot reaction blocks and wherein each cold reaction block has a number of openings formed therein for receiving a number of reaction vessels, the cold reaction blocks

20. (Currently Amended) An automated apparatus for performing reaction kinetics studies, the apparatus comprising:

a robotic device ~~for transferring~~ that transfers one reaction vessel from one hot reaction block to one cold reaction block;

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wherein the user interface has a first display screen having a first display window where a temperature vs. time graph for the study is displayed and a plurality of a user input display windows which display user inputted information including the predetermined temperature profile and the predetermined study time period and the number of reaction vessels, wherein the first predetermined temperature profile is a nonisothermal temperature profile and the second temperature profile comprises an isothermal temperature profile.

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24. (Currently Amended) The apparatus of claim 20, wherein the robotic device includes a gripping mechanism ~~for gripping and transferring that grips and transfers~~ one reaction vessel from the hot reaction block to the cold reaction block at one of the predefined transfer times.
25. (Original) The apparatus of claim 24, wherein the gripping mechanism includes a first finger and a second opposing finger with a space therebetween, one reaction vessel being disposed within the space and held between the first and second fingers during the transfer of the one reaction vessel from the hot reaction block to the cold reaction block.
26. (Original) The apparatus of claim 24, wherein the controller includes a master clock and a count-down clock, the master clock displaying a remaining time left in the study and the count-down clock displaying a remaining time before the next transfer of one of the reaction vessels.
27. (Currently Amended) The apparatus of claim 1, wherein data associated with a chemical reaction occurring in each reaction vessel is collected and logged as a single data point ~~for display~~ that is displayed on a corresponding graph.
28. (Currently Amended) A method of performing reaction kinetics studies and collecting data using an automated apparatus, the method comprising:
providing the automated apparatus, the apparatus including:
a plurality of reaction blocks including at least one hot reaction block ~~for heating~~ that heats one or more reaction

vessels and at least one cold reaction block ~~for cooling~~ that cools
the one or more reaction vessels after heating thereof;

a robotic device ~~for transferring~~ that transfers
one reaction vessel from one hot reaction block to one cold
reaction block; and

a controller having a user interface and being in
communication with the robotic device;

entering a first input using the user interface, the first
input corresponding to a number of reaction vessels used in the
study;

entering a second input using the user interface, the
second input corresponding to an isothermal temperature profile
which represents the temperature of at least one of the hot
reaction blocks over a time period of the study;

entering a third input using the user interface, the third
input corresponding to a nonisothermal temperature profile which
represents the temperature of at least one of the hot reaction
blocks over a time period of the study;

entering a fourth input using the user interface, the
fourth input corresponding to the time period of the study
beginning with a start time and ending with a stop time;

transferring the reaction vessels at predefined transfer
times, the predefined transfer times being calculated using the
first and fourth inputs, each reaction vessel being transferred from
one hot reaction block to one cold reaction block by the robotic
device which receives command signals from the controller;

collecting kinetics data including at least a temperature
of the hot reaction block at each transfer time and a sampling time

indicating when each reaction vessel transfer occurred; and
fitting the kinetics data to an inputted kinetics model.

29. (Previously Presented) The method of claim 32, wherein transferring the reaction vessels comprises:

sending a signal from the controller to the robotic device causing a gripping mechanism of the robotic device to be positioned at a predefined coordinate location relative to one of the hot reaction blocks where the gripping mechanism is instructed to securely grasp one of the reaction vessels, the one reaction vessel then being delivered to one of the cold reaction blocks for storage thereat.

30. (Previously Presented) The method of claim 32, wherein the gripping mechanism includes a first finger and a second finger with a space therebetween, one reaction vessel being disposed within the space and held between the first and second fingers during the transfer, the gripping mechanism being operated by:

toggling a predetermined pressure between first and second lines, the gripping mechanism closing about the one reaction vessel when the pressure is applied to the first line and the second line is vented, the gripping mechanism being opened to release the one reaction vessel by applying the pressure to the second line with the first line being vented.

31. (Previously Presented) The method of claim 32, wherein the at least one hot reaction block is heated by a heating device, the heating device having a temperature control device and a temperature monitoring device associated therewith, the

temperature control device maintaining the temperature of the at least one hot reaction block according to the first input.

32. (Currently Amended) A method of performing reaction kinetics studies and collecting data using an automated apparatus, the method comprising:

providing the automated apparatus, the apparatus including:

a plurality of reaction blocks including at least one hot reaction block ~~for heating~~ that heats one or more reaction vessels and at least one cold reaction block ~~for cooling~~ that cools the one or more reaction vessels after heating thereof;

a robotic device ~~for transferring~~ that transfers one reaction vessel from one hot reaction block to one cold reaction block;

a controller having a user interface and being in communication with the robotic device;

entering a first input using the user interface, the first input corresponding to a number of reaction vessels used in the study;

entering a second input using the user interface, the second input corresponding to a predetermined isothermal temperature profile which represents the temperature of at least one of the hot reaction blocks over a time period of the study;

entering a third input using the user interface, the third input corresponding to a predetermined non-isothermal temperature profile which represents the temperature of another of the hot reaction blocks over a time period of the study;

entering a fourth input using the user interface, the

fourth input corresponding to the time period of the study
beginning with a start time and ending with a stop time;

transferring the reaction vessels at predefined transfer
times, the predefined transfer times being calculated using the
first and fourth inputs, each reaction vessel being transferred from
one hot reaction block to one cold reaction block by the robotic
device which receives command signals from the controller; and

collecting kinetics data including at least a temperature
of the hot reaction block at each transfer time and a sampling time
indicating when each reaction vessel transfer occurred,

entering a fifth input using the user interface, the fifth
input representing a model fit program to which the kinetics data
is fitted to generate a representative temperature vs. time graph.

33. (Cancelled)

34. (Previously Presented) The method of claim 31, further
including:

entering a sixth input using the user interface, the sixth
input being a value for the number of reaction vessels to be
transferred at each predefined transfer time; and

transferring the reaction vessels according to the sixth
input.

35. (Previously Presented) The method of claim 32, wherein the
fifth input is selected from the group consisting of a logarithmic
fit, a reciprocal fit, a linear fit, an exponential fit, and a power
function of time fit.

36. (Currently Amended) A method of performing reaction
kinetics studies and collecting data using an automated apparatus,

collecting kinetics data including at least a temperature of the hot reaction block at each transfer time and a sampling time

indicating when each reaction vessel transfer occurred,
performing multiple kinetics studies in parallel by
having at least one hot reaction block and at least one cold
reaction block associated with a first run and at least one hot
reaction block and at least one cold reaction block associated with
a second run, wherein at least one of the first, second and third
inputs is different between the first and second runs, wherein the
first run is an isothermal run and the second run is a non-
isothermal run.

37. (Canceled)